

## ABSTRACT OF THE DISCLOSURE

A photomask assembly is described having a frame for supporting a transparent pellicle above a photomask substrate, defining a closed pellicle space overlaying the substrate. The frame is formed of a porous material configured to allow the pellicle space to be purged with an inert gas within a reasonable processing time period, thereby removing any harmful chemicals that might be present. The frame preferably is made by a method that includes preparing a gel by a sol-gel process, drying the gel, and partially densifying the dry gel. The resulting frame has a gas permeability to oxygen or nitrogen higher than about  $10 \text{ ml.mm/cm}^2\text{.min.MPa}$ , an average pore size between 0.001 micrometer and 10 micrometers, and a coefficient of thermal expansion between  $0.01 \text{ ppm/}^\circ\text{C}$  and  $10 \text{ ppm/}^\circ\text{C}$ .